

Claims

I claim:

1. A continuously variable transmission for use with motor vehicles comprising:
an electronic control unit configured to include logic rules for controlling a transmission, including issuing transmission control commands;
an automated gear unit having gears providing a plurality of selectively engaged gear ratios and engaging one of the plurality of gear ratios responsive to commands from the electronic control unit to do so and the gear unit having a gear unit input shaft and a gear unit output shaft;
a variator having a variator input shaft and a variator output shaft and configured to continuously vary a ratio of input torque to output torque between the variator shafts responsive to commands from the electronic control unit, the variator output shaft drivingly connected to the gear unit input shaft;
an input gear set drivingly connected to the variator input shaft;
an input fixed ratio element configured to reduce the torque from the input gear set to the variator and operably disposed between the input gear set and the variator input shaft; and
an output fixed ratio element configured to increase the torque from the variator and operably disposed between the variator output shaft and the gear unit input shaft.
2. A continuously variable transmission as claimed in Claim 1 wherein the input gear set is a planetary mixer gear set including a ring gear and a sun gear and a carrier retaining a plurality of planet gears disposed between the ring gear and the sun gear with at least one of the ring gear the sun gear and the carrier drivingly connected to the variator input shaft.

3. A continuously variable transmission as claimed in claim 1 wherein the gear ratios of the automated gear unit are gathered gear ratios.
4. A continuously variable transmission for use with motor vehicles comprising:
 - an electronic control unit configured to include logic rules for controlling a transmission, including issuing transmission control commands;
 - an automated gear unit having gears providing a plurality of selectively engaged gear ratios and engaging one of the plurality of gear ratios responsive to commands from the electronic control unit to do so and the gear unit having a gear unit input shaft and a gear unit output shaft;
 - a variator having a variator input shaft and a variator output shaft and configured to continuously vary a ratio of input torque to output torque between the variator shafts responsive to commands from the electronic control unit; and
 - a planetary mixer gear set including a ring gear and a sun gear and a carrier retaining a plurality of planet gears with the planet gears disposed between the ring gear and the sun gear with the ring gear being fixed to a mixer input shaft the sun gear drivingly connected to the variator output shaft and the carrier fixed to a mixer output shaft drivingly connected to the automated gear unit input shaft.
5. A continuously variable transmission as claimed in claim 4 further comprising:
 - an input fixed ratio element configured to reduce the torque from the input gear set to the variator and operably disposed between the mixer input shaft and the variator input shaft; and
 - an output fixed ratio element configured to increase the torque from the variator and operably disposed between the variator output shaft and the sun gear.

6. A continuously variable transmission as claimed in claim 5 wherein the input fixed ratio element is provided by a input drive gear coaxial with and fixed to the mixer input shaft engaging a driven gear coaxial with and fixed to the variator input shaft and the output fixed ratio element is provided by a drive gear coaxial with and fixed to the variator output shaft engaging a driven gear coaxial with and fixed to the sun gear.

7. A continuously variable transmission as claimed in claim 6 wherein the ring gear has the input drive gear affixed to an outer diameter thereof.

8. A continuously variable transmission as claimed in claim 6 wherein the input driven gear and the output drive gear are both disposed on a side of the variator proximate to the automated gear unit and the output driven gear is disposed between the planetary carrier and the automated gear unit.

9. A continuously variable transmission as claimed in claim 7 wherein the input driven gear and the output drive gear are both disposed on a side of the variator proximate to the automated gear unit and the output driven gear is disposed between the planetary carrier and the automated gear unit.